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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER				
CHANG, AUDREY Y				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/658,055

Applicant(s)

CURTIS ET AL.

Examiner

Audrey Y. Chang

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 14, 16, 19-21, 24, 30-39 and 121-132 is/are pending in the application.
- 4a) Of the above claim(s) 5, 6, 9, 14, 19-21, 31-34 and 36-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 8, 10, 11, 16, 23, 24, 30, 35 and 121-132 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-846)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/07, 12/07, 1/08, 5/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on April 14, 2008, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, 6, 14, 16, 19, 24, 30, 36, has canceled claims 12-13, 15, 17-18, 25, 27-29, 40-43 and 45-60 and has newly added claims 121-132.
- Claims 5-6, 9, 12-14, 17-21, 25, 27, 29, 31-34, 36-39, 41, 45, 47-52 and 54-60 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected group and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on **March 3, 2005**.
- Claims 1-4, 7-8, 10-11, 16, 23-24, 30, 35, and 124-132 remain pending in this application.
- The rejection of claims under 35 USC 112, first paragraph, set forth in the previous Office Action concerning the newly added matters is withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 112

1. Claims 121-123, 125-127 and 129-131 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The newly added claims 121-123, 125-127 and 129-131 recite the plurality of information layers are stored by confocal multiplexing, angle multiplexing and wavelength multiplexing however the claims fail to provide any critical steps or critical criteria for enabling these multiplexing methods.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 24, 30, 35, 125-132 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, **claims 24 and 30** recites the broad recitation "holographic data mask having a holographically recorded pattern associated with an information layer", and the claims also recite "the holographic data mask includes a plurality of *holographically recorded patterns* associated with different *information layers*" which is the narrower statement of the range/limitation.

Claim Objections

4. Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to *further* limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The limitation concerning the information layer has multiple data pages has already been disclosed in independent claim 1.

5. Claims 1-4, 7-8, 10-11, 16, 23-24, 30, 35, and 124-132 are objected to because of the following informalities:

(1). Claims 1, 24 and 30 have been amended to include the phrase "holographic data mask includes a plurality of holographically recorded patterns wherein each pattern is associated with an information layer that is divided into multiple data pages each data page comprising a plurality of data pixels" and the phrase "holographic data mask includes a plurality of holographically recorded patterns associated different information layers". It is not clear what are the structural and logical relationships between the "patterns", "information layers", "data pages" and "data pixels".

(2). The phrase "the plurality of information layers are stored" recited in the newly added claims 121-123, 125-127, 129-131 is confusing since it is not clear if the storage is referred to storage in the holographic data mask or in the holographic storage medium.

Appropriate correction is required.

Drawings

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the **newly amended phrase** "holographic data mask

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includes a plurality of holographically recorded patterns, wherein each pattern is associated with an information layer that is divided into multiple data pages each data page comprising a plurality of data pixels" as recited in amended claims 1, 24 and 30 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 7-8, 10-11, 16, 23, 24, 30, 35, and 121-132 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US Patent Application Publication by Mok et al (A1 20010035990) in view of the patent issued to El Hafidi et al (PN. 7,254,105).

Claims 1, 24 and 30 have been significantly amended that necessitate the new grounds of rejections.

Mok et al teaches a method for recording holograms in holographic storage media (200 or 310, Figures 2 and 3b), wherein the recording method is comprised of step of illuminating a holographic master medium serves as the holographic data mask with a replicating beam (210, or 316, 318) to produce diffracted beam (230 or 305) as the modulated beam. Mok et al teaches that the transparent portion (220, or 317, 319) of the replicating beam serves a *reference beam* wherein the modulated beam and the reference beam are directed to the recording *or replicating medium*, serves as the holographic storage medium, to record the interference pattern between the modulated beam and the reference beam as the holograms.

Mok et al teaches that the mater medium or the holographic data mask comprises multiplexed master holograms that are recorded holographically (please see the holographic recording of the master hologram in Figures 1a and 3a) by holographic recording multiplexing schemes such as *spatial multiplexing* and *volume multiplexing*, wherein the volume multiplexing scheme includes angular multiplexing scheme, (please see paragraphs, [0008], [0010], [0031] and page 9, lines 1-6). This means the master holographic data mask comprises a densely packed holograms, that are recorded holographically by spatial and volume multiplexing schemes. However this reference does not teach *explicitly* that the densely packed spatially and angular multiplexed holograms, are having plurality patterns each pattern is associated with an information layer that is divided up into multiple data pages each data page comprising a plurality of data pixels. But as demonstrated by **El Hafidi** et al holograms recorded in the recording medium using angular multiplexing method and spatial multiplexing method can have the densely packed matrix format or pattern as shown in Figures 2, 2a and 2b). The spatial multiplexing scheme is carried out to record individual points (8a, Figure 2) on the hologram recording medium (8) wherein angular multiplexing method allows a plurality of packets or holograms (8b) be

recorded in each of the individual point. As shown in Figures 2, 2a and 2b, the holograms recorded in the hologram recording medium (8) using *spatial and angular multiplexing schemes* can have holograms arranged with a plurality of information layers, wherein each information layer comprises a *plurality of data pages* (8a, 14 or 23 as shown in Figures 2, 2a, 2b). The number of the information layers corresponds to the number of packets in each data point (8a, 13a or 22, please see column 6, line 22 to column 7, line 24). It is implicitly true that each data page comprises data pixels. It is therefore implicitly true or is obvious to one skilled in the art that according to the demonstration of El Hafidi et al, the *multiplexed* master holographic data mask of Mok et al, with spatial and angular multiplexedly recorded holograms, can be arranged to have a plurality of information layers, wherein each information layer is divided up into a plurality of data pages.

With regard to claim 2, El Hafidi et al teaches that the holographic recording medium has a dimension of about 1 cm^2 and it can have about 100 pages (8a, as shown in Figure 2), this means each page is about 1 mm^2 in dimension. This means the separation of the pages is less than 1 mm.

With regard to claim 3, El Hafidi et al teaches that the data pages or packets (8b, 14 or 23) are recorded in overlapping manner, (please see column 7, lines 19-20).

With regard to claim 4, as shown in Figure 2 of Mok et al the reconstructed holographic image is formed at a plane outside of the holographic storage medium.

With regard to claims 7 and 8, Mok et al teaches that the modulated beam is propagated to the holographic storage medium or replicating medium *without a lens*, (please see Figure 2 and 3b). Although this reference does not teach explicitly that *alternatively* that the modulated light can be imaged to the holographic storage medium by at least one optical element, such feature is considered to be obvious matters of design choice to one skilled in the art since to either use or not use an optical element would produce the same result namely propagating the modulated beam to the storage medium for recording.

With regard to claims 10 and 11, Mok et al teaches that the holographic storage medium can be an optical disc, (please see paragraph [0003]). Although it does not teach explicitly that it can also be a rectangular card, such modification would have been obvious to one skilled in the art for designing the shape of the storage medium is considered to be obvious matters of design choice.

With regard to claim 24, the multiplexed master hologram with spatial and angular multiplexing holograms of Mok et al in combination with the teachings of El Hafidi et al meet the limitations of the data mask.

With regard to claim 30, it is implicitly true that a light source is included in the holographic recording system and method as taught by Mok et al in combination with the teachings of El Hafidi et al.

With regard to claim 35, it is implicitly true that to replicate the multiplexed master hologram on the replicating medium or storage medium, one of the holographic data mask and the storage medium is moved to facilitate the multiplexing recording. El Hafidi et al teaches (Figure 1) that in general lens (115) is used for replaying the object image to storage medium.

With regard to claims 121-132, Mok et al teaches that the multiplexed master hologram having plurality of information layers can be recorded use conventional multiplexing methods such as angle multiplexing and wavelength multiplexing, (please see paragraph [0008]). Although this reference does not teach explicitly about using confocal multiplexing, but since this method is known in the art, one skilled in the art can apply it as desired to make the multiplexed master holographic mask with desired holograms recorded. It is implicitly true that different information layers having angular multiplexing holograms can be separated addressed by read beam with the desired angle specifics.

Response to Arguments

9. Applicant's arguments with respect to **amended** claims 1, 24 and 30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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